



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,669	08/16/2006	Masahide Miura	129110	9963
25944	7590	04/28/2009	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850				ZIMMER, ANTHONY J
ART UNIT		PAPER NUMBER		
		1793		
MAIL DATE		DELIVERY MODE		
		04/28/2009		
		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/589,669	MIURA, MASAHIKE
	<b>Examiner</b>	<b>Art Unit</b>
	ANTHONY J. ZIMMER	1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 04 February 2009.

2a) This action is **FINAL**.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 6 and 9-14 is/are pending in the application.

4a) Of the above claim(s) 9 and 12-14 is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 6 and 10-11 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6 and 10-11 are rejected under 35 U.S.C. 102(a or e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kuno '440.

In regard to claim 6, Kuno teaches a catalyst comprising a core with a ceria/zirconia solid solution and a surface layer of ceria, i.e. the proportion of ceria/zirconia solid solution is higher in the core than in the surface layer, and the ceria (second metal oxide) constitutes a higher molar fraction in the surface layer than in the core. Kuno teaches supported platinum. See Example 2.

In regard to claim 10, Kuno is silent in regard to primary particles. However, the process of making the product of Kuno utilizes a process of aggregating sols (i.e.

dispersed colloidal particles) like that of the instant invention and thus would form cores and surface layers comprising primary particles. See [0030]-[0031] of Kuno.

In regard to claim 11, Kuno teaches the addition of the rare earth metals lanthanum and praseodymium, at least some of which would be present in the surface layer. See [0033].

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 6 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bog '016.

Bog teaches a catalyst with a ceria/zirconia core and a lanthana or rare earth containing surface layer. See Example E9 and the second sheet of drawings. Thus, the catalyst has a higher proportion of the ceria/zirconia mixed oxide in the core than in the

surface layer. Bog teaches that cerium comprises from 50-99% of the core and that the rare earth metal (mentioned above) can be from 1-60% of the surface layer. See [0033] and [0070]. Overlapping ranges are *prima facie* obviousness (i.e. in regard to the limitation that cerium comprise a higher molar fraction in the surface than in the core). See MPEP 2144.05.

Bog does not teach an example with cerium as the added rare earth metal.

However, Bog suggests that rare earth metals can be used. See [0031]. Thus, it would have been obvious to one of ordinary skill in the art to use ceria in the place of lanthanum in order to affect the predictable result of forming an exhaust gas purifying catalyst/oxygen storage material. Bog teaches employing palladium as a precious metal. See [0114]-[0116]. Bog does not teach using platinum as the precious metal component. However, platinum is commonly used as the precious metal in exhaust purification catalysts. Thus, it would have been obvious to one of ordinary skill in the art to substitute one precious metal for another in order to affect the predictable result of forming said catalyst.

In regard to claim 10, Bog teaches the formation of cores of primary particles. See [0043]. The surface layer is produced using a precipitation process followed by calcination which produces a layer of particles that are considered primary particles.

In regard to claim 11, Bog teaches that the surface layer can include magnesium (an alkaline earth metal) or lanthanum (a rare earth metal) as  $M^2$ . See [0031].

***Response to Arguments***

Applicant's arguments filed 2/4/2009 have been fully considered but they are not persuasive.

Applicant argues that Kuno does not meet the limitations of the claims because Kuno "almost all metal elements at the cores of the particles are Zr" and because the office action did not provide any indication of a molar fraction of cerium and zirconium in the core or surface layer. See page 6 of arguments of 2/4/2009.

However the instant claims only require that the molar fraction of cerium and zirconium constituting a ceria-zirconia solid solution in the core part is higher than the molar fraction of cerium and zirconium constituting a ceria-zirconia solid solution in the surface layer. In the example cited by applicant it is noted that "almost all" the particles in the core are zirconia, thus the core contains ceria as well (present in a solid solution as the particles are fired (calcined), see [0027]). This meets the broad limitation(s) of the claims. Furthermore, the instant claim does not require that any of the surface layer contain a solid solution of cerium and zirconium because even a particle with a ceria/zirconia core and surface layer of 100% ceria meets the limitation as cited in the claim. Moreover, Kuno discloses teaches specific values of zirconia mole percentages in the core 80%, 90%, 95%, and 98% that require that ceria be present as a solid solution therein (as discussed above). See [0018].

Applicant argues that Bog does not teach or suggest the rare earth metal replaces the  $M^2$  oxide therein and that Bog does not meet the limitation that "a molar

fraction of cerium constituting ceria in the surface layer is higher than a molar fraction of the cerium constituting ceria in the core part."

However, the instant claim only requires that ceria be present in the surface layer, and as explained in the rejection above, inclusion of ceria in the surface layer is suggested by Bog. The molar fraction limitation is also addressed in the rejection above.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY J. ZIMMER whose telephone number is (571)270-3591. The examiner can normally be reached on Monday - Friday 7:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ajz

/Steven Bos/

Primary Examiner, Art Unit 1793